

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A semiconductor device including a bonding pad having interconnecting metallization protected by an insulating layer, said metallization selectively exposed by a window in said insulating layer, comprising:

a patterned seed metal layer positioned on said interconnecting metallization exposed by said window and overlapping a portion of said insulating layer around said window;

a metal stud on said seed metal, said stud aligned with said window, said stud including a top surface and side surfaces;

a barrier metal layer conformally covering the top and side surfaces of said stud; and

an outermost bondable metal layer over said barrier metal layer.

2. (original) The device according to Claim 1 wherein said outermost metal layer conformally covers said barrier layer and provides a flat surface having an average roughness of less than about 50 nm.

3. (original) The device according to Claim 1 further comprising a bond wire attached to said outermost metal.

4. (original) The device according to Claim 1 wherein said interconnecting metallization comprises copper.

5. (original) The device according to Claim 1 wherein said seed metal layer comprises copper.

6. (original) The device according to Claim 1 wherein said seed metal layer comprises a stack of a refractory metal layer and a copper layer.

7. (original) The device according to Claim 1 wherein said insulating layer is selected from a group consisting of silicon nitride, silicon oxynitride, silicon carbide, silicon dioxide, polyimide, or stacked layers thereof.

8. (original) The device according to Claim 1 wherein said metal stud comprises copper.

9. (original) The device according to Claim 1 wherein said barrier layer comprises nickel.

10. (original) The device according to Claim 1 further comprising an additional barrier layer positioned between said barrier layer and said outermost layer, said additional barrier layer comprising palladium.

11. (original) The device according to Claim 1 wherein said outermost bondable metal layer comprises gold.

12 - 27. (canceled)

28. (new) A semiconductor device including a bonding pad having interconnecting metallization protected by an insulating layer, the metallization selectively exposed by a window in the insulating layer, comprising:

a metal stud on the bonding pad having a top surface and a side surface upwardly extending from the insulating layer;

a barrier metal layer conformally covering the top and side surface of the stud; and

an bondable metal layer conformally covering the barrier metal layer.

29. (currently amended) A semiconductor device, comprising:

a copper bonding pad having a top surface partially uncovered through a window in an insulating layer;

a copper seed metal layer contacting the bonding pad; and the edge portion of the seed layer overlapping the insulating layer near the window and substantially parallel the bonding pad;

a copper stud extending upwardly from the seed metal, having a top surface and a side surface; the side surface not in contact with the seed metal.

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30. (currently amended) The semiconductor device of claim 29, further comprising a barrier metal layer conformally covering the top and side surfaces of the stud; and an bondable metal layer conformally covering the barrier metal layer.